

# LISTING OF PAST NATURAL HAZARDS OCCURRENCES AND DISASTERS

As compiled by the [Office of Emergency  
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- April 2001      Flooding (FEMA-1375-SD) -- This Presidential declared disaster was precipitated by an on-set of flooding problems that began during a spring thaw in early March 2001. In addition to the initial flooding, a second similar weather system produced more heavy rains in the Aberdeen, Huron, Watertown, and Brookings area on April 11, 2001. Finally, a third major system passed through South Dakota on April 21-22, 2001, leaving up to twenty-two inches of heavy snow in the Black Hills, located in the western part of the state, while the eastern portion of the state received from 4 to 8 inches.
- The major impact of this disaster was to public infrastructure. The impact to individuals was not significant, therefore the disaster was declared for Public Assistance and all the counties in South Dakota are eligible to apply for the Hazard Mitigation Grant Program.
- This disaster also heavily impacted South Dakota's agricultural and livestock community. Due to ice and wind damage to utility poles and lines, electrical services to some areas were interrupted. Numerous bridges and roads were impacted as well.
- Aug/Sept  
2000      Fire (FEMA 2319-FSA-SD and FEMA 2324-FSA-SD) -- The Flagpole Mountain fire complex started on August 11, 2001, and lasted 4-5 days. The wildfire was actually three different starts, the Flagpole Mountain, Green Canyon and Chilson II fires in the southern hills area. Cause of the fires was attributed to lightning. The affected area is in Fall River County in southwestern South Dakota. The fires threatened a total of 6 to 7 small subdivisions in Sheps Canyon. The approximately 100 homes within the subdivisions were threatened with 30 of these structures imminently threatened. There was only one access road to the area. As such, voluntary evacuation was in effect.
- The wildfire started on U.S. Forest Service (USFS) land and remained on USFS land for approximately a day and a half. The Flagpole Mountain fire burned in ponderosa pine, the Green Canyon fire burned in grass, scrub, and juniper. Initially, the fire burned to the south, but the wind changed direction and began to blow from the southeast, moving the fire to the north and west. The fire-line was less than 1/4 mile from development and threatened the homes in the subdivisions. The terrain where these fires were burning was extremely rocky and steep, making access and fire-fighting

difficult.

The Jasper Fire was located in Custer County in the Southwest Black Hills. It was the largest fire to occur in the Black Hills in at least a century. The fire started at about 2:30 pm on August 24, 2000, and was contained on September 8, 2000. The cause of the fire was arson. The weather was very hot and dry, vegetation moisture was at record low levels and atmospheric conditions were very unstable. The conditions caused extreme fire behavior and the fire spread rapidly. Almost immediately after ignition, the fire spread into the tops of the trees and blowing embers began causing spot fires ahead of the main fire. The fire created its own weather pattern as it burned. Lightening from the storm created by the fire was a big concern. The fire completely blackened some areas, leaving scorched, dead trees and ash-covered ground in its wake. Other areas experienced only a light ground burn. Large areas within the fire perimeter remain green, either lightly burned or completely undamaged. The fire blocked highways. The fire threatened two towns, Hill City (Population 650) and Custer (Population 1740). The towns were considered for evacuation, but did not have to be evacuated. Fire-fighting personnel evacuated houses within three miles of the fire. The fire threatened more than 100 houses in the unincorporated community of Pass Creek. It also burned acreage at the Jewel Cave National Monument.

April 2000

Flooding (FEMA-1330-SD) -- From April 19-20, a severe spring storm consisting of rain, heavy snow, and very high winds struck seven western counties of South Dakota. The storm's greatest impact was on the electrical power system. The power providers indicate that over 1,500 power poles were damaged or destroyed. Eligible damage to public infrastructure is estimated to be approximately \$2,500,00. A presidential Major Disaster Declaration for Custer, Fall River, Pennington, Shannon and Jackson Counties was signed on May 19, 2000.

June 1999

Tornado (FEMA-1280-SD) -- A series of tornadoes and flooding was concentrated on the Pine Ridge Indian Reservation in Shannon County. The Reservation was declared for FEMA's Individual Assistance, Public Assistance and Hazard Mitigation programs on June 9, 1999. The community of Oglala was heavily impacted by the tornadoes along with other smaller communities spread throughout the Reservation in Shannon County. Many homes were destroyed by the event along with a varying degree of public infrastructure damage.

May/June  
1998

Tornado (FEMA-1218-SD) -- By late afternoon of May 30, 1998, the atmosphere over the north central United States had become favorable to a significant outbreak of severe weather. An air mass stationed over southeastern South Dakota had become very unstable, while a dry line/cold front combination was advancing slowly to the east/southeast into the unstable air mass. At jet stream level, a well-defined wind maximum was approaching the dry line/cold front intersection. All of these factors

combined to produce towering cumulus clouds near the Missouri River by 4:30 pm (CDT).

At approximately 8:40 pm, following a series of thunderstorm warnings and numerous funnel sightings in the area, a violent tornado struck the town of Spencer, South Dakota, which lies approximately 45 miles west-northwest of Sioux Falls in extreme western McCook County. The tornado, rated F4 on the Fujita Tornado Intensity Scale, killed 6 people, injured more than one-third of the town's 320 residents, and destroyed most of the town's 190 buildings, including all public and numerous private facilities. An assisted living center was also destroyed. The center had no basement, which offered no protection from the tornado. In fact, most of the 6 fatalities were residents of the center. Only 12 structures were left standing in the entire town of Spencer.

During the storm, electrical service was out. Survivors reported that the warning siren system lost power prior to the touchdown of the tornado.

In addition to the town of Spencer, some farms in Hanson and McCook Counties were heavily damaged. Total damage was estimated at \$18 million. On June 1, 1998, the President declared disasters in McCook and Hanson Counties as a result of the tornadoes.

On June 3, 1998, this disaster declaration was expanded to include Day, Clark, Marshall, and Spink Counties in northeastern South Dakota. Severe storms had struck that portion of the state beginning on April 25, 1998, and had resulted in damage and more flooding.

Feb/May  
1997

Flood - (FEMA-1173-DR-SD / All counties declared disaster areas.) The first significant winter storm hit eastern part of the state in mid November, dumping up to 10 inches of snow across the northeast and producing a major ice storm with widespread damage across the southeast. Major winter storms were fairly frequent throughout January with blizzard conditions occurring several times, especially across the northeast. From mid November to mid February, the general weather across the eastern part of the state could be described as cold and wet with below normal temperatures (in excess of 30 degrees below zero) and record setting above normal snowfall. The persistent cold greatly limited snowmelt between storms allowing the snow to pile up to 48 inches across much of the northeastern portions of the state. Mid February snow depths elsewhere across eastern portions ranged from 10 to 24 inches. The National Weather Service (NWS) snow water equivalent measurements of February 12th ranged from approximately 2 inches near the Missouri River to over 6 inches in Marshall County. Snow water equivalent values from 4 to 5 ½ inches were common over the central and northern portions of the James and Big Sioux River basins. Seasonably cool and relatively dry weather prevailed across the eastern parts from mid February to early April. An early April blizzard added to the remaining snow pack, which gradually melted south to north by the end of April. Heavy rain and snowstorms in April, compounded by

severe winter blizzards and existing saturated soil conditions, resulted in persistent flooding throughout the state. Many people were evacuated from their homes and farms, while others had limited or no access or escape. Heavy snowmelt and pounding rains turned prairie potholes into lakes, pushed people from their homes, and prevented farmers from planting thousands of acres of land. Due to the saturated conditions, many people experienced lengthy delays, or not being able to return to their homes, farms, or businesses. The James River Water Development District estimated that five years of flooding have destroyed or severely damaged approximately 75 percent of the forested areas in the James River valley. Riverine flooding destroyed or damaged many homes and businesses, impacted water and sewage treatment plants, and damaged or destroyed many roads and bridges. This flood caused a minimum of \$51,249,493 in damages. Two people died.

Jan 1997      Snow Storm - (FEMA-1156-DR-SD / All counties declared disaster areas.)  
{Also see event description for 1173 below.} Twice in a 7-day period in early January, cold Arctic air swept down and "froze" the state. The governor closed the Interstates for public safety. More than 36,000 head of cattle perished. Roads were blocked or covered by 20-foot drifts of snow. Fifteen days after the storm ended, some roads were still blocked by snow. The Day County highway superintendent reported 20- and 40-foot vertical drifts blocking the highway. Livestock losses, damaged buildings, and feed shortages occurred in an area called "red zone." This is an area of 4,722 cattle operations, 1,200 sheep operations, 1,000 hog farms, and 515 dairies along the northern third of the state west to east. This storm caused a minimum of \$29,527,562 in damages/cleanup efforts. Three people died while trapped in vehicles along the highways.

1997      Wildfire -- 69 fires burning 1,353.65 acres.

Nov 13-26,  
1996      Ice Storm - (FEMA-1161-DR-SD) A slow moving winter storm with severe snow and freezing rain entrenched itself over much of the state. The effects of the storm were felt primarily in the Black Hills and southeastern portions of the state. The storm was a combination of a strong system of cold air hovering close to the ground with a system of warm air above. This combination made for rain, fog, and snow which quickly turned to damaging ice. The snow and ice formed and amassed on roadways, trees, electric transmission lines, and power poles. Some power lines were swollen by ice to five inches in diameter. The excessive weight and severe wind conditions snapped lines and flattened poles. Thousands of pole braces, crossarms, and anchors at scattered locations also cracked under the heavy stress. Six rural electric cooperatives (REC), affecting approximately 10,700 REC customers, experienced serious outages due to the loss of poles, braces, lines, crossarms, anchors, and substation failures. Customers were without power in subfreezing temperatures for continuous periods ranging from several hours to several days. The force of the storm caused major delays on Interstates 90 and 29. Portions of state and county highways and roads

were closed for an extended period of time due to heavy ice and snow accumulation and extremely poor visibility.

Feb 6, 1996 Earthquake -- 9:10am (CST) -- Intensity V -- 24 miles SSW of Yankton (3.6 Richter) Felt by many people. The quake caused Gavins Point dam personnel to conduct dam safety checks.

Earthquake -- 9:08am (MST) -- Intensity V -- NW of Mt. Rushmore (3.7 Richter) Felt by many people who noticed typical earthquake ground movement.

Both of the above quakes were centered about 5Km below the surface. Neither quake can be definitely associated with any mapped fault, but both are near known or postulated faults. The Black Hills, being a structural dome, is full of faults and joints dating to the uplift some 50 million years ago. Very little strain now accumulates along them, so only small, rare earthquakes have occurred in the region during historic times. Work by several geologists during the last decade or so have shown that much of the region has widely spaced joints and faults breaking the earth's crust into blocks, each township size in area. The good news is that there is very little strain to release as earthquakes in South Dakota. In the south central part of the state, the SD Geologic Survey have mapped some of these blocks and have identified individual block-bounding faults that have moved 40 feet or more vertically and a few hundred s of feet horizontally in very small increments during the last 50 million years. The Nebraska quake is probably just a little jostling between the blocks; small adjustments which occur occasionally in the region.

Oct 22, 1995 Winter Ice Storm -- (FEMA-1075-DR-SD) Effects of this storm were felt first in the Black Hills with portions of the Hills receiving up to 22 inches of snow. As the storm moved across South Dakota, ice and 5 to 15 inches of wet snow formed on trees and electric lines and poles. Winds associated with the storm caused lines to slap together and poles to fail producing widespread power outages to large portions of rural South Dakota. Tree damage also resulted in significant damage to electrical utilities. Damage includes broken poles, broken wires and substation failures due to transmission line damage. Thirteen (13) rural electric cooperatives have reported damage from this storm.

This storm also forced major transportation delays as portions of Interstate 90 and Interstate 29 had to be closed because of the snow accumulation on the roadway and poor visibility. One of these interstate closings caused Davison and Codington Counties to initiate their sheltering plan for travelers who could not find rooms at local motels. The storm also caused numerous cancellations and delays in school openings because of travel conditions or the lack of power. Interstate traffic was restored by early Tuesday, October 24.

The power outages also lead to several rural water system pumping stations

to go off-line causing a loss of water utilities to members of rural water systems. The National Guard has been utilized to provide generators to power these pumping stations; therefore restoring water service.

Crews from electric cooperatives in South and North Dakota, Minnesota, Iowa, and Nebraska assisted local cooperatives with line repairs. In addition to the full resources of the local cooperatives affected, out of state co-operatives sent an additional 207 linemen, 49 digger trucks, 46 bucket trucks, 18 service trucks, and 31 pole trailers with fresh poles which were utilized in the repair effort.

- Jul 3, 1995      Earthquake -- Intensity III --- SW of Ft. Thompson (2.8 Richter)
- Mar/May  
1995      Winter Ice Storm & Flooding -- (FEMA-1052-DR-SD) The entire state has had above normal precipitation from January through May, ranging from about 1-2 inches above in the SW to 5-9 inches above in the east. This is up to 200% of normal. Many official reporting stations such as Huron, Mitchell, and Sioux Falls, experienced the all-time wettest Spring on record. This is also likely the case for a large portion of central and eastern SD. Most damage to public facilities was caused by ground saturation and flooding due to very high residual groundwater tables from 1994, heavy winter snow and spring rain, and rapid snowmelt. Many roads were under water or unusable due to high groundwater saturation of the subgrade, causing interruption of emergency services. Damage also included power transmission and distribution facilities owned by rural electric cooperatives. Preliminary damage surveys identified over 3,000 homes with some type of damage. The vast majority of damage was from groundwater seepage of 1-3 inches of water into basements. In many areas the water table rose to near land surface levels, saturating septic drain fields and preventing proper treatment of residential sewage. Also identified during the **preliminary** damage surveys was \$9.3 million in damages to infrastructure of public facilities. Roads & Bridges and Utilities were the two highest categories with almost \$5.7 million and \$2.6 million in estimated damages, respectively. Federal aid system roads received \$7.1 million in damages.
- Jan/Feb  
1995      Winter Ice Storm -- (FEMA-1045-DR-SD) Damage to electric power lines in 21 counties was caused by an unusually foggy January weather. Continuous fog in many areas resulted in a heavy crust of ice forming on many of the powerlines in central South Dakota. The fog-crust was reported to be from 3-5 inches in diameter. The addition of high winds caused power poles to snap. Deep drifts of snow made it difficult for power company linemen to gain access to the damaged power lines and in many areas county snow removal equipment was required to provide access. According to reports submitted, 13,435 households were without electric power for varying periods of time. The maximum time without power was 12 days. Early damage reports indicated that damages would exceed \$3,218,126. More than 1700 power poles had to be replaced.

- 1994 Wildfires -- 201 fires burning 2,663 acres [includes Stagebarn Canyon].
- Aug 15, 1994 Wildfire -- Stagebarn Canyon near Indian Hills subdivision NW of Rapid City (FEMA-SD-2109-FSA). Fire started by lightening. 112 acres burned; cost in excess of \$159,000.
- Mar 18, 1994 Earthquake -- Intensity III --- Hot Springs (2.8 Richter)
- Mar/Jul 1994 Flood -- (FEMA-1031-DR-SD) Flooding in northeastern South Dakota began in mid-February 1994, as a result of very high residual groundwater tables from 1993's extremely high levels of precipitation (snow and rain), and rapid melting of the snowpack. Flooding continued into late March 1994, and then subsided. Rain has continued throughout the spring and summer months but the remainder of the snow melt was gradual and did not significantly contribute to flooding, as might be expected. On July 6, 1994, a significant storm system passed through central and northeastern South Dakota. Severe winds caused damage in the Pierre area and the town of Milbank in Grant County received approximately 6 inches of rain in a matter of two to three hours. The thunderstorm in Milbank caused that town's storm and sanitary sewer systems to overload and water backed into basements of several homes. Damage estimates suggest approximately \$4 million. The vast majority of damage is to county and township roads (which have significantly deteriorated because of saturation from near ground level water tables), culverts, and bridges. Many roads remain under water, as once-small (or dry) glacial lakes with no drainage outlets, grow in size and encroach upon nearby roadways. In 1995 total damages provided by the Department of Commerce, National Weather Service to be \$36,451,000. Two deaths resulted from the blizzard portion of this disaster.
- Sep 5, 1993 Earthquake -- Intensity III --- Deadwood (2.7 Richter)
- 1993 Wildfires -- 44 fires burning 678 acres.
- Summer 1993 Tornado (Arlington) -- Minor damage.
- Jun 14, 1993 Tornado (Pierre) -- Three homes damaged. No deaths.
- Mar/Sep 1993 Flood -- (FEMA-999-DR-SD) Early and rapid snow melt resulted in the localized flooding along portions of the three eastern river basins. Major problems began in May when severe weather spawned tornadoes and floods in five eastern counties, injuring 12 and killing 1 person. Heavy rains continued throughout May, June, and July which included a 6.5 inch deluge May 23rd on Sioux Falls that backed up sewage into 190 basements and

damaged city streets. By the end of June the Big Sioux River was over a mile wide in places, flooding many communities along its banks. During early July the swollen Vermillion and James rivers inundated thousands of acres of farmland and surrounding communities. Heavy July rains developed flash flood torrents on small drainages in Madison and Yankton, while rising lake levels flooded numerous communities situated on lake shores. Overall, the disaster contributed to four deaths, approximately \$2 million damage to business, \$12 million damage to public facilities, \$10 million to private residences, and \$204 million to agriculture. Federal aid system roads received \$3 million.

1992 Wildfires -- 958 fires burning 20,367 acres.

May/Jul 1992 Drought -- 28 counties declared by governor as drought disasters. May 13: Butte, Charles Mix, Corson, Dewey, Haakon, and Ziebach. June 8: Buffalo, Harding, Hyde, Jones, Lawrence, Meade, Perkins, and Stanley. June 17: Jerauld, Sully, Tripp, and Walworth. June 24: Douglas, Hughes, Lyman. July 2: Aurora, Bon Homme, Campbell, Edmunds, Hand, Jackson, and Todd.

Flood -- (FEMA-948-DR-SD) On June 13/14 a major spring storm resulted in severe weather in Harding County. Golf ball size hail and 10½ inches of rain occurred in a three hour time span. Crops were destroyed and over 500 sheep were killed. On the afternoon and evening of the 16th several violent thunderstorms (super cells) produced large amounts of rain and several large, damaging tornadoes. Heavy rain was experienced in the Davison, Miner, Kingsbury, Lyman, Buffalo, Moody, Brookings, Deuel, Minnehaha, and Hamlin Counties. The heavy rains occurred in an area already saturated by previous rains. Over a 2 to 3 day period 15 to 20 inches of rain fell in the Clear Lake/Watertown area resulting in widespread flooding of the Big Sioux River. The rains subsided late in the week. Some flooding was experienced by South Dakotans as far south as Sioux Falls.

Tornado (Arlington) -- Minor damage.

1991 Wildfires -- 815 fires burning 43,782 acres.

Oct 25, 1990 Earthquake -- Intensity V --- Aurora County N of Plankinton and WSW of Stora.

1990 Wildfires -- 860 fires burning 11,725 acres.

Mar 2, 1990 Earthquake -- Intensity IV --- Shannon County N of Manderson.

Jan 28, 1990 Earthquake -- Intensity V --- Shannon County N of Manderson.

- Nov 26, 1989 Earthquake -- Intensity III --- Walworth County near Lowery.
- 1989 Wildfires -- 911 fires burning 14,779 acres.
- Jul 25, 1988 Wildfire (Westberry Trails) -- FEMA-2068-FSA-SD: Suspected arson fire and was located in a subdivision on the western edge of Rapid City. Burned 3,980 acres.
- 1988 Drought -- Statewide. Regional impact varied.
- 1988 Wildfires -- 1,171 fires burning 69,512 acres.
- Oct 15, 1987 Earthquake -- Intensity III --- Beadle County NE of Wessington.
- Jul 20, 1987 Wildfire (Battle Mountain) -- FEMA-2061-FSA-SD: Started by lightening in the game production area, two miles from Hot Springs. Burned 2,200 acres.
- 1987 Wildfires -- 1,638 fires burning 52,277 acres.
- Jul 9, 1987 Earthquake -- Intensity III --- Beadle County near Virgil.
- 1986 Wildfires -- 478 fires burning 3,572 acres.
- May 25, 1986 Earthquake -- Intensity IV --- Sanborn County slightly NE of Storla.
- Mar 22, 1986 Flood -- (FEMA-764-DR-SD) The above average Fall rains and heavy winter storms during 1985-86 created a condition of supersaturated ground and record water levels in the lakes and Big Sioux River basin in the NE part of the state. The snow melt run-off into the numerous lakes forced the already full lakes to overflow and seriously impact residences, cottages, resort business, and agri-business. A severe winter storm covered the entire state during the week of April 14th, adding 1-3 inches of precipitation to this area.
- Damages related to the flooding were estimated to be: \$20.6 million - Agricultural, \$3.0 million - Public, \$620,000 - Business (non-farming), and \$1.7 million - Individual. Total damages: approximately \$25.9 million.
- 1985-1987 Drought -- Western ½ of State during 1985; continued in Black Hills during 1986-1987. Rated as a 10 to 25 year event.
- 1985 Wildfires -- 1,229 fires burning 110,669 acres.

1984 Wildfires -- 651 fires burning 28,230 acres.

Spring 1984 Flood (Big Sioux, James, and Vermillion rivers) -- (FEMA-717-DR-SD) Heavy precipitation returned to the region as the winter of 1983-84 was the 3rd snowiest on record (75 inches of snow at Sioux Falls). The heaviest snows occurred in November 1983 and in March 1984. Severe snowmelt flooding began March 20th and after the 4th wettest April on record, caused near record flooding on the Big Sioux, Vermillion, and lower James rivers in April. Numerous reports of water damage were recorded in the communities of Mt. Vernon, Parkston, Tabor, and Violin. These rivers did not go below flood stage until the end of April.

June was the wettest June on record in SE South Dakota and was the 6th wettest month on record at Sioux Falls. From June 4th - 22nd many large storms crossed the region dumping approximately 30 inches of rain causing repeated flash floods. Numerous roads and bridges were heavily damaged. Many areas had severe urban flooding with sewers and storm drains unable to handle the load, causing many basement walls to collapse. The Lake Menno Dam (Hutchinson County) collapsed on June 12th killing 450 hogs, destroying one car and damaging two, moving a farmhouse 75 feet off its foundation, scattering or destroying farm machinery, and completely sweeping away grain bins. On June 16th, 3 feet of water was flowing through downtown Davis (Turner County). Vermillion Lake Dam (McCook County) and many smaller dams sustained severe erosion. The Fulton Lake Dam (Hanson County) was severely weakened and in imminent danger of failing, but held.

On the 18th a train was derailed at Parker (Turner County) due to washed out tracks. On the 20th Lake Dimock Dam (Hutchinson County) gave way, destroying the dam and causing flooding in Milltown. A 400 yard sandbag dike saved the Lake Carthage Dam (Miner County) from destruction.

Widespread flash flooding caused severe erosion, washed out or weakened many roads, bridges, and culverts in addition to washing away crops in low lying areas. Many small stock dams were collapsing, washing out roads, bridges, and culverts beneath them. In Mt. Vernon (Davison County), there were 3 to 4 feet of water in homes. Twenty homes were evacuated along Dry Run Creek in Mitchell (Davison County). Sewage was 5 or 6 feet deep in parts of Mitchell.

Estimates by the US Geological Survey place the flooding on the Big Sioux River drainage at about a 10 to 30 year recurrence interval, the Vermillion River at about a 100 - 500 year recurrence interval, and the lower James River at about a 100 - 300 year recurrence interval. By June 22nd, over 1 million acres of cropland were under water in the region. Total damages estimated to be: \$289 million.

May 12, 1984 Tornadoes (Clark & Codington counties) -- 18 to 20 farmsteads and homes were directly affected and ten homes severely damaged.

- Nov/Dec 1983 Winter Storms -- Weeks of sub-zero temperatures preceded the actual blizzard and set the stage for the deadly combination of cold, blizzard conditions, and loss of electrical power. A series of winter storms struck South Dakota in late November and throughout December. The impact was felt statewide but it was particularly heavy upon the Rosebud and Pine Ridge reservations. Cheyenne River, Lower Brule, and Crow Creek reservations were also affected but to a lesser degree. Many of the Rosebud and Pine Ridge communities contained propane fueled/heated homes. At the height of the storms, reservation roads were drifted closed and became impassible. A fuel shortage occurred when the weeks of sub-zero temperatures drained propane tanks faster than normal. Tribal governments opened community shelters for living and feeding for those who could make it to the shelters. As conditions worsened, fuel contractors could not start their delivery vehicles and more roads were increasingly impassible. County and tribal government snowplows were overwhelmed by the enormity of the task.
- At the request of tribal leaders, the governor directed state agencies to respond. On December 26th state, federal, and private response action began with the Division of Emergency Management coordinating the effort. The governor's office obtained propane delivery trucks from Iowa. The state cement plant delivered one semi-truck load of coal to both Rosebud and Pine Ridge reservations. SD DOT provided drivers for the borrowed propane trucks. Each truck contained a tribal representative to guide the driver. SD DOT also provided heavy equipment and operators to open the roads for the fuel trucks. One private sawmill donated lumber for wood burning stoves. Many volunteer organizations donated either fuel or funds to purchase fuel to both Rosebud and Pine Ridge. Tripp County Highway and Emergency Management also sent equipment to assist. The Bureau of Indian Affairs and tribal governments also used their resources to assist throughout the emergency. One death was recorded as caused by this situation.
- 1983 Wildfires -- 950 fires burning 18,613 acres.
- Mar 4, 1983 Earthquake -- Intensity VI --- On Hyde - Buffalo County border S of Mac's Corner.
- Spring 1983 Flood -- The winter of 1982-83 was the 4th snowiest on record and led into some severe snowmelt flooding on the lower Big Sioux and Vermillion rivers from late February to mid March (March '83 was the 5th wettest on record). Heavy rains through April and into early May prolonged flooding and high stages on these rivers through mid May. Very heavy rains again in mid and late June caused flash flooding in the area and again caused severe flooding on the lower Big Sioux and near record flooding on the lower Vermillion River. The flash flooding in June caused widespread erosion and crop damage and there was severe agricultural land flooding on the mainstems of the lower Big Sioux and Vermillion rivers.

- Nov 15, 1982      Earthquake -- Intensity V --- Bon Homme County near Avon.
- 1982              Wildfires -- 403 fires burning 6,886 acres.
- Jul 11, 1982      Earthquake -- Intensity V --- Moody County near Egan.
- Oct 9, 1981        Blizzard (Black Hills) -- The entire area was virtually paralyzed by 3 to 6 feet of heavy snow and 40 to 70 mph winds. Roads were totally blocked, trees and power lines broken and some homes sustained heavy damage. Not only were the northern hills residents isolated, but some were also without water and power for at least 3 days causing food spoilage.
- 1981              Wildfires -- 1,556 fires burning 24,537 acres.
- Sep 13, 1981      Earthquake -- Intensity V --- Bennett County SE of Batesland on the Nebraska border.
- Mar 29, 1981      Winter Storm -- The storm front created a tornado near Martin, which destroyed a mobile home and injured one occupant. By 3:00 am on the 30th, the storm was generating 50 to 80 mph winds and dumping up to 10 inches of heavy, wet snow in the northwest. Power lines and at least 1,500 poles in the northwest were snapped after being coated with 1 to 6 inches of ice. Strong winds also snapped power lines and poles in south-central South Dakota. These winds overturned trucks and cars along Interstate 29. The winds also overturned a railroad tank car, spilling phosphoric acid. This accident forced the evacuation of part of Garretson.
- Jan 1981          Winter Storm -- A series of storms blocked the majority of roads in eastern South Dakota, overturned vehicles, and stranded hundreds of motorists. The severity of these storms caused 4 people to die after their vehicles stalled in the deep snow.
- 1980              Wildfires -- 1,349 fires burning 42,077 acres.
- 1980-1982         Drought -- Statewide. Rated as a 10 to 25 year event. Most severe during 1981.
- 1979              Wildfires -- 485 fires burning 14,214 acres.
- Jun 19, 1979      Tornado (Watertown) -- Damage to: trees, roofs, and power lines.
- Tornadoes -- Bon Homme, Turner, Yankton, Hanson, Sanborn counties reported tornado damage.

Tornado (Letcher) -- Caused minor injuries with numerous report of tree and building damages.

Tornado (Springfield) -- Tree damage.

Spring 1979      Minor Flood (Big Sioux River) -- North Sioux City caused by an ice jam.

Minor Flood (Lake Kampeska) -- Affected property on the lake shore.

1978              Wildfires -- 479 fires burning 48,290 acres.

Jun 1978        Tornadoes (Aberdeen) -- On June 15th and 16th Aberdeen and Marshall County experienced tornadoes, hail, and some flooding. Five trailers were damaged by tornadoes. Marshall County had crop and building damage from hail and tornado winds.

Summer  
1977              Tornado (Arlington) -- Minor damage.

1977              Wildfires -- 535 fires burning 6,952 acres.

Winter Storms -- February, March, and November were especially active months for winter storms. Many rural roads were blocked with snow drifts 6 to 8 feet high. Interstate 90 was often blocked and stranded up to 100 cars. Six people died as a result of these storms. In addition to power outages reported in various part of the state, the March storm dropped over an inch of rain in the eastern part of the state and generated walnut size hail in Grant County. In November, a winter storm toppled a 1,400 foot TV tower and caused 6 freight cars to derail.

1976              Wildfires -- 582 fires burning 9,130 acres.

Drought -- Eastern South Dakota; US President declared a "disaster."

Jun 1976        Flood (Black Hills) -- In a 24 hour period on June 13/14, 3 to 10 inches of rain fell in the northern Black Hills. And additional 2 to 3 inches of rain plus heavy snow was recorded over this area on the 15th and 16th. The run-off from these rains did considerable damage in the counties of Lawrence, Meade, Butte, and Harding. Physical structures, streets, roads, sewers, and water systems sustained about \$1.5 million. Deadwood, Spearfish, Belle Fourche, Sturgis, and Galena received most of this damage. Throughout the region a number of bridges and culverts were washed out and many of the roads suffered water erosion. Debris damage was not as great as in 1972, however, there was considerable movement of rocks and gravel. There was also a problem with mud and land slides. Only one death resulted from this

- flood event.
- 1975 Wildfires -- 851 fires burning 30,671 acres
- May 16, 1975 Earthquake -- Intensity IV --- Fall River County near Edgemont.
- Jan 1975 Blizzard -- Of the two blizzards in 1975 the one occurring on January 11th & 12th was the worst. High winds exceeding 60 mph, sub-zero temperatures, and heavy snow combined to produce killer conditions. Several people died and thousands of head of livestock perished in eastern South Dakota.
- 1974 Wildfires -- 1,022 fires burning 38,864 acres.
- 1973 Wildfires -- 704 fires burning 36,252 acres.
- Jul 23, 1973 Tornado (Ft. Pierre/Pierre) -- The tornado began in Ft. Pierre where it did minor damage; one grain elevator and a few mobile homes were affected. It jumped the Missouri River and then "skipped" through Pierre. Houses and businesses were damaged and a few homes were completely destroyed. Many mobile homes were either scattered about or piled up on one another. No deaths and 10 people were injured. Damages amounted to over ½ million dollars.
- 1973-1977 Drought -- Statewide, except Black Hills. Rated as a 10 to 25 year event. Most severe in 1976.
- 1972 Wildfires -- 452 fires burning 13,638 acres.
- Jun 1972 Flood (Rapid City) -- On June 9th thunderstorm activity began about 6:00pm. The ensuing rains localized over an area 45 miles long by about 16 miles wide from Custer to Deadwood. As much as 14 inches of rain were dumped in some localities (8-10 inches average). Evacuation of residents along Rapid Creek was ordered by 10:15pm. Flood and debris laden water flowed into Canyon Lake and clogged the dam's chute spillway. This caused a 300 foot breach in the dam and sent a wall of water and debris pouring down on residents below the dam. The toll of the flood produced carnage was staggering. At least 238 people died (including 5 listed as missing and presumed dead). Thousands of people barely escaped death and hundreds of people were forced to climb, stand, or cling to objects which saved them from being swept away. Property damage exceeded \$79 million. 436 houses were destroyed and 930 houses damaged. 710 mobile homes were either damaged or destroyed. 36 businesses were wiped out and 236 more sustained damage. About 5,000 cars were reported lost to flood activity. As a result of this flood, Rapid City engaged in the second recorded hazard

mitigation effort in South Dakota by refusing to allow rebuilding in the floodway. This program effectively launched Federal government efforts to create a Hazard Mitigation Program.

Flood (Keystone) -- Keystone was nearly destroyed. Motels, shops, bars, and restaurants, which cater to tourists were either damaged or destroyed. Many campgrounds located along the creeks were washed away. At least 10 campers died. Total damage was set at \$1.4 million.

Flood (Black Hawk & Box Elder) -- These cities received \$2 million in damages as the flood destroyed or damaged 75 homes and 180 mobile homes along Box Elder Creek.

Flood (Sturgis) -- Sustained over ½ million dollars in damages: 275 houses and 25 businesses were affected.

The Black Hills region sustained millions of dollars damage to roads, streets, and bridges. Very few bridges were left standing.

- Oct 19, 1971      Earthquake -- Intensity IV --- Jackson County half way between Kadoka and Norris: 3:15pm Glass rattled.
- 1971              Wildfires -- 815 fires burning 20,890 acres.
- 1970              Wildfires -- 477 fires burning 6196 acres.
- 1969              Wildfires -- 211 fires burning 3254 acres.
- Spring 1969      Flood (Big Sioux River) -- This flood is recorded as surpassing the flood of 1881 in magnitude with water discharge rates more than twice those of 1962. This flood resulted from a large buildup of snow. Snow fell in December (1968) in normal amounts, but the accumulations for January and February set a record. The temperatures during March were below the seasonal average so little run-off occurred. The entire basin was ice free by April 6th. The upper part of the basin received an inch of rain on April 7th and compounded the flood. One-eighth of Watertown was under water. Dempster, Estelline, and Castlewood had flood damage as did the lower portion of Dell Rapids. Fifty families were evacuated from Moody County and fifty people had to be removed from Renner. Sioux Falls was more fortunate as they had developed a flood control system. The system was cited for preventing more than \$12 million in flood damages.
- Flood (Vermillion River) -- This flood is listed as being greater than the 1962 flood. The town of Centerville was surrounded by water. Within the town, the sewers backed up and the disposal plant was flooded. In the surrounding country, the damage was about the same as in the past. Three bridges were washed out and numerous roads damaged. 450 feet of one highway was

completely washed away. The dike system did not contain the water and the lowlands flooded. The US Geological Survey placed the damage to the basin at \$1 million.

Flood (James River) -- The river was in flood during all of April. The creeks in the lower portion of the basin started flooding early in the month. Their discharge of water started ice breaking up on the main stem of the James. The massive flow of the smaller tributaries caused a backing of water up the James and increased the problem of flooding. Huron recorded a flood crest of 16.7 feet. This is almost one foot higher than registered during the previous 30 years. In that area damage was estimated at \$750,000.

In the northern part of the state, Moccasin Creek flooded from water coming out of Richmond Lake. This caused some flooding in Aberdeen, as well as extensive flooding in the surrounding countryside. Total damage to the basin was over \$16 million. Most of the damage was incurred by farm land, bridges, and roads.

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|--------------|---|
| Mar 1969     | Blizzard -- Heavy snowfall and high winds knocked out power in the Aberdeen area. Rural residents were hard hit as blocked roads prevented early power line repair. The Belle Fourche area also sustained loss of power and phone service as hundreds of poles were knocked down.   |
| Nov 23, 1967 | Earthquake -- Intensity V --- Lyman County E of Hamill near Tripp - Lyman County border: Magnitude 4.4, felt in Winner, Rosebud, White River areas. Many residents were frightened at Gregory, where furniture shifted and windows cracked. Livestock stampeded through fences on some farms.   |
| Jun 18, 1967 | Tornado (Rapid City) -- One motel suffered heavy structural damage along with several other buildings in the city. No deaths and only 3 people injured. Over \$2 million in damages.  |
| Jun 26, 1966 | Earthquake -- Intensity VI --- Meade County between Bethlehem and Tilford: Magnitude 4.1, slight damage at Rapid City: 5:59am At Keystone well water was muddied for several hours. At Rapid City concrete steps cracked away from a house and a patio cracked. At Deadwood, there was a fallen tree due to the shock. At Keystone, one observer reported he could see the ground moving. Pictures on walls bounced, buildings creaked, and dishes rattled. There was a gradual onset with a bumping swaying motion. In Rapid City buildings creaked and loose objects rattled. There was a rapid onset with a bumping motion and moderately loud earth sounds were also heard. |
| Mar 1966     | Blizzard -- Exceeded blizzard of 1888 in terms of livestock loss. The storm moved into eastern South Dakota and remained stationary for 12 hours. Winds of 60 to 70 mph were common. Gettysburg had gusts up to 100 mph. The driving wet snow clung to the mouths of livestock and they suffocated. Cattle and sheep loss approached 100,000 animals with a value of nearly   |

\$20 million.

Many towns suffered physical damage from the storm. A total of 380 people in Pierre had to be evacuated as the result of a power failure. Many towns lost phone service and some communities had windows shattered by high winds, allowing snow to drift into the buildings. A 121-car train was completely stopped by snow drifts. This storm killed 10 people.

- Dec 1965      Ice Storm -- Storm destroyed an estimated 3,500 telephone poles in the Aberdeen area. Damage was nearly \$650,000. Total damage to light and power systems approached \$1 million. This storm recorded at the time as the worst ice storm experienced in 40 years.
- May 18, 1965      Flood (Black Hills) -- Flash flooding brought widespread damage to Deadwood, Spearfish, and Sturgis. Heavy snows in excess of 30 inches and 7 inches of rain triggered an avalanche of water shooting down the creeks and gullies. Some houses were swept away in the Spearfish-Sturgis area while others sustained major damage. One resident whose home was near a creek lost everything. He reportedly had a 70 ton concrete retaining wall between the house and the creek--this was completely washed away. Flood damage to the Black Hills area was estimated at over \$2 million.
- Aug 26, 1964      Earthquake -- Intensity IV --- Pennington County S of Wall in Badlands National Park.
- Mar 28, 1964      Earthquake -- Intensity VII --- Epicenter at 42.9N, 101.6W (W. Nebraska) Duration 10 seconds. Depth 65.98 miles (41 km) - Magnitude 5.1 [This and the quake on March 27th were not actually in South Dakota but caused damage anyway. They are listed here to represent the danger from earthquakes which begin outside the state's borders.]
- Mar 27, 1964      Earthquake -- Unknown Strength due to proximity of the Great Alaska Quake. --- near Van Tausell, Wyoming (9:00pm) Felt throughout Black Hills with an apparent intensity of IV.
- Mar 24, 1964      Earthquake -- Intensity V --- Custer County NNE of Hot Springs near Fall River - Custer County border: 12:12am Felt by all at Wind Cave National Park. Small rocks fell in cave; buildings creaked and loose objects rattled. Moderately loud, rumbling noise heard. Abrupt onset, trembling motion. Duration 3-5 seconds.
- Nov 21, 1962      Wildfire -- Burned an area that stretched from Harrold to Highmore (20 miles long) and consumed 30,000 acres of hay and cropland. No loss of life.

- Summer 1962 Flood (Black Hills) -- A summer storm dumped more than 3 inches of rain on Rapid City. The resulting damage: 120 mobile homes, 2 motels, and over 400 homes had water damage. Bridges, roads, sewer systems, streets, and recreation areas along Rapid Creek were also damaged. Total damages to Rapid City alone were over \$800,000. Sturgis, Deadwood, and Whitewood received extensive damage to roads and bridges throughout the area. Road equipment lost during this flood was estimated at \$200,000.
- May 21, 1962 Tornadoes (Gregory County) -- Several homes were destroyed as was farm equipment, automobiles and livestock. Many miles of power poles and lines were also knocked down. Damage exceeded \$500,000.
- Tornado (Mitchell) -- About \$1 million worth of damage to Mitchell and over \$1 million damage to the surrounding countryside.
- Spring 1962 Flood (Big Sioux River) -- Snow and ice were the cause of the devastation. Ice jams were a serious problem as they held back the run-off. From Brookings to Sioux Falls, ice was causing problems. Flandreau and Renner also had flooding because of the ice. Farther north flooding was also occurring. Watertown received flooding from Willow Creek, Lake Kampeska, and the Big Sioux River.
- USACE estimated damage by the Big Sioux River to be \$2.5 million. A large item was the collapse of the interstate bridge near Sioux City -- replacement cost was \$600,000. Overall, this flood was recorded as being second only to the flood of 1881 in magnitude.
- Flood (Vermillion River) -- One of the worst for the southern segment of the basin. This flood resulted from snow melt and ice buildup. The towns of Centerville and Davis reported minor flooding. The majority of the flooding was directed toward the farm country. Thousands of acres of land were again submerged. The highway system received heavy damage. Five bridges in Turner County were washed out along with many roads being closed. The damage to the roads and bridges was listed at \$60,000.
- Dec 31, 1961 Earthquake -- Intensity VI --- Stanley County near Wendte: 10:35am Strongest at Murdo and Pierre: Pierre--felt by many. Slight damage. Plaster cracked, cement floors cracked, doors of refrigerators shaken open, clothes dryer moved several inches. Fishermen along the Missouri River reported that the moment the quake struck, hundreds of fish leaped into the air. Buildings shook and loose objects rattled. Intensity V --- Murdo--felt by many. Plaster on walls cracked, venetian blinds swayed, dishes rattled, faint earth sounds heard, trembling motion with abrupt onset. Intensity IV --- Presho and Winner. Intensity I-III --- Draper, Hayes, Huron, Midland, Onida, Philip, and White River.
- Apr 1960 Flood (Vermillion River) -- Between 10 and 15 thousand acres were flooded

when the dikes were unable to retain the rapid run-off. It was reported that many fences were destroyed due to ice and debris pile up. Also county road systems were damaged due to erosion. The town of Davis reported receiving about one foot of water.

Mar 1960

Flood (Big Sioux River) -- Flooding occurred from the Brookings area south to the junction with the Missouri. Deer Creek and Medary Creek caused flooding in Aurora. The town of Bruce also experienced flooding as well as Sioux Falls. Again, damages were heavy as an estimated \$2.3 million worth of destruction was done. Approximately 1/2 of this amount was suffered in the lower basin. About 86,000 acres of land was flooded and 41,000 acres of this amount from Sioux Falls to Sioux City.

Flood (James River) -- The US Geological Survey reported that severe flooding occurred north of Huron with flood water lingering in the area. Tributaries in the Mitchell area also presented flood problems. Pony Creek, which flows through Parkston, rose to flood stage in 3 hours. People living along its banks had to be evacuated. A number of culverts and bridges in the town were jammed with debris. North of Mitchell, Dry Run Creek flooded causing at least 5 families to be evacuated.

Jan 12, 1959

Earthquake -- Intensity IV --- Spink County near Doland: 7:15am Felt by many; rumbling sound followed by what sounded like a boiler explosion. Dishes and windows rattled.

Dec 3, 1957

Earthquake -- Intensity IV --- Davison County near Loomis: 1:30am Awakened several people in Mount Vernon, where buildings creaked and loose objects rattled. At Mitchell, houses shook, windows and doors rattled; stock "alarmed and all bunched up."

Jun 17, 1957

General Comment: Rated as a 10 to greater than a 100 year event. Five deaths.

Flood (Big Sioux River) -- This is the only recorded major flood attributed solely to rain. An estimated 7 inches of rain fell in the Flandreau and Sioux Falls area. The Skunk and Marne Creeks as well as the Big Sioux River were in flood stage. The towns of Flandreau, Egan, Baltic, Trent, Sioux Falls, and Canton all felt the impact of the flood. Sioux Falls had flood damage to the north and southern parts of town as well as heavy flooding in the business district along the river. Damage was estimated to be over \$1 million in the city and \$4 million over all.

The overall picture was also depressing. Total damages were estimated at \$4 million. Of this amount, \$980,000 was sustained in the southern half of the Big Sioux River basin -- over 62,000 acres of land were flooded. About \_ of this land was located in the lower portion of the basin. Families were forced from their homes and many of the houses were flooded. Most of the

crops in the area were destroyed by the water with little or no chance to replant because of the short growing season.

Flood (Vermillion River) -- The sudden rain that fell during the middle of June, dropped between 3 and 8 inches of precipitation throughout Turkey Ridge Creek and the Vermillion River north of Centerville. The citizens and National Guard filled sandbags to be used in and around Centerville. An estimated 50,000 sandbags were placed on the lowland dike system south of the town to help contain the water. An estimated total of 80 square miles of land were flooded.

Flood (James River) -- The southern portion of the basin was also affected. The tributary of Marne Creek erupted with a flash flood which brought considerable water and debris to Yankton. Several homes and businesses adjacent to the creek received water and mud damage.

- 1954-1962 Drought -- Statewide. Rated as being a 25 year event. Regional variations. Most severe during 1956 and 1959, except in the Black Hills where most severe during 1961.
- Dec 31, 1953 Earthquake -- Intensity IV --- Gregory County S of Burke.
- Dec 21, 1953 Earthquake -- Intensity IV --- Perkins County near Zeona
- Nov 14, 1952 Earthquake -- Intensity IV --- Pennington County near Silver City
- May 1952 Flood (Rapid City) -- Heavy flooding through Canyon Lake area of west Rapid City. Pictures of water damage were very much like damage sustained during the disastrous 1972 flood.
- Flood (Sturgis/Deadwood) -- Heavy rains brought flash flooding which tore up streets and gas pipelines in Sturgis. Bridges were washed out and water erosion caused rock slides. Water damage and landslides also occurred in Deadwood.
- Apr 8, 1952 Flood (Big Sioux River) -- Warm weather brought on another rapid snow melt and flooding conditions. Watertown had flooding starting at Lake Kampeska. There was also heavy flooding in the southern part of the town. Farther down stream, the Big Sioux was about 1 mile wide at Estelline. Flooding occurred in the towns of Flandreau, Trent, and Dell Rapids. There was also heavy flooding around the Sioux Falls Air Base (Joe Foss Field). Pictures of the locality gave it the appearance of a large lake.
- From Watertown to Sioux Falls, about 99,000 acres were flooded and \$4.5 million of damages sustained. Below the falls to the mouth of the river, an additional 30,000 acres of land were covered and about \$1 million damage

done to the area.

Flood (James River Basin) -- The tributaries of the Elm and Maple rivers delivered snow melt run-off over thousands of acres of farmland. Ice jams on the Elm and Maple rivers forced the water overland. Hundreds of farm families were reported isolated by the water while other families in the area were still snowbound. The end result was an enormous amount of water standing on frozen ground causing the Elm River to spread to one mile in width. This water washed out a number of culverts and roads as well as isolating farms.

Jan 1952

Blizzard -- This blizzard had many similarities to the one of 1888. The temperature dropped from 40°F to -8°F in a short period of time. The wet, driving snow clung to everything. Cattle were blinded and suffocated as snow covered their mouths and noses. Young country school children lost their way home and died of hypothermia. A few ranchers died when they tried to gather their livestock. Snow piled up to a point that people could walk along tops of REA power lines. In some isolated areas, people were snowed in for 4 months off and on throughout the winter. Planes were used to deliver mail, groceries, fuel, and feed for livestock. Snowtrack vehicles were used to transport doctors to isolated farm areas.

Spring 1951

Flood (Big Sioux River) -- Heavy flooding originated in the Brookings area. An accumulation of snow throughout February and an additional six to fourteen inches during March served as the flood source. High temperatures in late March brought about rapid melting and the flood condition. The Big Sioux was recorded as being ½ mile wide in Moody County, 1½ miles wide around Baltic and Sioux Falls, and 2 miles wide below the Rock River. The area from Brookings to below the falls of Sioux Falls had about 73,400 acres of land flooded and damages of nearly \$2.25 million. The area from Sioux Falls to Sioux City, Iowa had an estimated 29,000 acres flooded and \$600,000 in damages.

Flood (Vermillion River) -- The combination of snow melt run-off and ice dams brought extensive water to the town of Davis. The entire main street of the town had water damage. One portion of town had three inches of water which caused a number of families to evacuate. Elsewhere, the towns of Centerville and Montrose received some water. At least three bridges were washed away, lowlands were flooded, and some stored grain destroyed.

Apr/May  
1950

Flood (Grand, Moreau, and James rivers) -- 10 to 25 year flood event. Much of the damage was the result of water lingering over the fields. Parts of Brown County and adjacent counties had flood conditions for more than a month. More than 40,000 acres of cropland was submerged and damages were greater than \$900,000. Flooding also created heavy damage to road surfaces and caused the loss of some grain and livestock. Total damage estimated to be \$5 million.

- Dec 14, 1949 Earthquake -- Intensity III --- Gregory County near Dallas.
- Jul 31, 1949 Tornadoes -- A series of tornadoes struck the countryside between Beresford and Elk Point in the SE corner of the state. No loss of life, but property damage was over \$1 million.
- Jun 3, 1949 Earthquake -- Intensity IV --- Potter County near Gettysburg.
- Mar 7, 1949 Earthquake -- Intensity III --- Hand County near Miller.
- Jan 1949 Blizzard -- Affected the entire state. Blizzard conditions existed for weeks rather than days. The general weather conditions were low temperatures (-2 to -8°F), heavy snows, 24 inches for the month, and winds from 40 to 73 mph. Towns and rural areas were completely isolated as the snow blocked up everything. Roads, railroad tracks, and buildings were buried under tons of snow. People were lost in the storm and many cattle were frozen. Airplanes were used to fetch food, fuel, and medicine to stranded people. Snow was very deep in western South Dakota. Pictures of the area showed drifts 35 feet high and several thousand feet long. Train passengers were pictured as standing on the high snow banks watching a train cut its way through the drifts.
- Aug 25, 1947 Earthquake -- Intensity IV --- Gregory County near Bonesteel.
- Jun 29, 1947 Tornado -- Occurred in the rural area of Howard and Carthage. Damage was light with only a barn and airplane hangar damaged. One death resulted.
- Jun 12, 1947 Tornado -- The rural area of Turner/Yankton counties was struck by a tornado which did hundreds of thousands of dollars damage. Barns, houses, and sheds were destroyed and crop damage was listed as heavy. No recorded deaths or injuries.
- Jul 23, 1946 Earthquake -- Intensity VI --- Jerauld County near Wessington Springs: In Wessington water mains cracked at two points.
- Nov 10, 1945 Earthquake -- Intensity IV --- Bon Homme County E of Kingsbury and SE of Tyndall: 3:00am Rattled dishes.
- May 16, 1943 Earthquake -- Intensity IV --- Custer County NNE of Hot Springs near Fall River - Custer County border: 12:40pm Felt by many "like heavy trucks rumbling down the street." Dishes rattled.
- 1943 Blizzard -- Large numbers of cattle killed.

- Mar 11, 1942 Earthquake -- Intensity III --- Meade County near Sturgis: 11:55am Light shock felt in Deadwood, Fort Meade, Lead, Piedmont, Sturgis, Terraville, Trojan, Whitewood, and Black Hawk.
- May 25, 1941 Earthquake -- Intensity V --- Custer County NNE of Hot Springs near Fall River - Custer County border: 12:25am. In Hot Springs one wall reported cracked. Pictures and light fixtures swayed in Hot Springs, Rapid City, and Martin. Not felt in Longvalley, Belvidere, Oelrichs, or Cottonwood.
- Jun 10, 1939 Earthquake -- Intensity IV --- Gregory County on Nebraska border S of Fairfax: 12:30pm There was one shock of about 15 seconds duration. It was of a gradual bumping nature, direction northwest to southeast, with a rumbling sound.
- Nov 4, 1938 Earthquake -- Intensity IV --- Same as above (10:15pm).
- Nov 4, 1938 Earthquake -- Intensity IV --- Gregory County near Whetstone Bay (10:10 pm): Felt in Academy, Lake Andes, Burke, Colome, Dallas, Gregory, and Platte.
- Oct 11, 1938 Earthquake -- Intensity V --- Minnehaha County between Renner and Sioux Falls: 3:37am, In Sioux Falls buildings jarred; beds shook, dishes rattled, and pictures and other loose objects swayed. A rumbling subterranean noise came as a climax of the earthquake. The recording pens on water and electric meters at the municipal water works were jarred. Sioux Falls police received more than 50 calls from citizens. Intensity IV at Humboldt, Madison, Parker, Spencer, and Yankton. Intensity III and under at Canton, Centerville, Egan, Hudson, Lennox, Salem, Sherman, and Vermillion. Not felt in Beresford, Brookings, Howard, Mitchell, or Olivet.
- Oct 1, 1938 Earthquake -- Intensity V --- Brule County near Chamberlain: 4:15pm.
- Jan 2, 1938 Earthquake -- Intensity IV --- Beadle County near Broadland: 11:05am.
- Oct 30, 1936 Earthquake -- Intensity IV --- Custer County NNE of Hot Springs near Fall River - Custer County border: Not felt elsewhere.
- Jul 5, 1936 Record High Temperature: 120°F at Gann Valley, Buffalo County.
- 1936 Record Low Rainfall: 10.9 inches -- smallest in 98 years of records.
- Nov 1, 1935 Earthquake -- Intensity III --- Moody County between Egan and the Minnesota border on Hwy 34.

- Aug 30, 1934 Earthquake -- Intensity IV --- On the Brule & Charles Mix County border between Bijou Hills and Academy: Abrupt trembling motion accompanied by a rumbling sound, felt by many, small objects moved. Also felt in Pukwana.
- Jan 29, 1934 Earthquake -- Intensity IV --- Marshall County NNW of Kidder near Newark: 6:30am, awakened several, dishes rattled, rumbling sound.
- Jul 9, 1932 Tornado -- South of Sioux Falls (Minnehaha County): One person died, 11 people injured and damages listed at \$150,000. Property damage consisted of a number of horses and cattle killed or injured, buildings knocked down and telephone and power lines destroyed. This tornado was from a storm which also dropped baseball sized hail throughout the area.
- Jan 17, 1931 Earthquake -- Intensity IV --- Aurora County E of Platte Lake and S of White Lake: Felt by many. Trembling motion with loud sounds.
- 1929-1942 Drought -- Statewide. Rated as being greater than a 25 year event. "Dust Bowl" years. Regional impact varied a little. Most severe during 1931, 1933, 1934, and 1936. Included in this period was a "plague" of grasshoppers.
- Oct 6, 1929 Earthquake -- Strong Shock --- City of Yankton: 6:30am, Deep rumbling resembling distant thunder set windows rattling. Some dishes thrown from shelves. Felt around Yankton and at Gayville and Volin about 15 miles to the east.
- Nov 16, 1928 Earthquake -- Intensity V --- Pennington County near Mystic City: Felt at Custer and Rochford.
- 1927 Blizzard -- Large numbers of cattle killed.
- Dec 30, 1924 Earthquake -- Intensity IV --- Same as above (10:30 pm).
- Dec 30, 1924 Earthquake -- Intensity IV --- Same as above (10:20 pm).
- Dec 30, 1924 Earthquake -- Intensity IV --- Same as above (10:15 pm).
- Dec 30, 1924 Earthquake -- Intensity IV --- Custer County NNE of Hot Springs near Fall River - Custer County border (10:10pm).
- May 1922 Flood (Cheyenne and James River basins) -- 25-50 year flood event: Caused by snowmelt and rain.

- Jan 2, 1922 Earthquake -- Intensity VI --- Brule County near Chamberlain.
- Sep 24, 1921 Earthquake -- Intensity IV --- Aurora County E of Platte Lake and S of White Lake.
- Mar 16, 1921 Earthquake -- Intensity III --- Minnehaha County near Sioux Falls at Lincoln County border.
- Jul 14, 1920 Earthquake -- Intensity III --- Fall River County near Oelrichs.
- May 1920 Flood (Rapid City) -- Homes were flooded, bridges were washed out and utility systems disrupted.  
Flood (Hat Creek & James River) -- 25-50 year flood event: Caused by snowmelt and rain. Deaths: 7.
- Jun 29, 1916 Earthquake -- Intensity III --- Tripp County near Winner.
- Feb 24, 1916 Earthquake -- Intensity III --- Shannon County near Pine Ridge.
- Oct 23, 1915 Earthquake -- Intensity V --- Jackson County near Kadoka.
- Jun 2, 1911 Earthquake -- Intensity V --- Beadle County near James River crossing into Sanborn County: Felt in the James River Valley.
- 1910-1914 Drought -- Western \_ of state. Regional impact varied. Most severe in 1911.
- Jun 12, 1907 Flood (Rapid City) -- Caused by more than 5 inches of rain falling throughout the Black Hills within one 6 hour period. The flood destroyed 5 bridges, damaged roads and power lines, and washed out about ½ of Canyon Lake Dam. The entire downtown area along Rapid Creek was under water. Four people died and the railroad system sustained heavy damage.
- May 10, 1906 Earthquake -- Intensity VI --- Bennett County near SE corner and on the Nebraska border: Felt from Rushville to Valentine, Nebraska.
- May 1905 Blizzard -- A "freak" storm hit western South Dakota counties in May. Cattle wandering around in the blizzard walked off the bluffs in the Badlands area and fell to their death. Estimated cattle loss exceeded 16,000 animals.
- Mar 14, 1900 Earthquake -- Intensity III --- Brown County near NE corner of Richmond Lake (5:00am).

- Mar 14, 1900 Earthquake -- Intensity III --- Brown County near NE corner of Richmond Lake (3:00am).
- Dec 6, 1899 Earthquake -- Intensity IV --- Hand County near Miller.
- Oct 12, 1895 Earthquake -- Intensity V --- Pennington County near Hayward.
- Oct 11, 1895 Earthquake -- Intensity IV --- Pennington County near Hayward: Felt at Rochford, Keystone, and Hill City.
- 1889-1905 Drought -- Statewide. Regional impact varied. Most severe during 1894-96 and 1898-1901.
- Jan 12, 1888 Blizzard -- This storm was preceded by 10 days of cold, snowy weather, 8 to 10 inches of new snow and a low temperature of -28°F. The weather warmed on the 11th and by the 12th, it was foggy and about 32°F. The temperature dropped that afternoon to -20°F in five minutes. The wind blew so strongly that it knocked people off their feet. Many children, sent home from school, did not make it home. The blizzard was so withering that people lost their sense of direction and wandered about until they died of hypothermia (exposure). Thousands of head of livestock and wild animals perished. Many buildings were covered with snow or destroyed and all transportation stopped. Although the storm lasted less than one day, an estimated 400 people died throughout the Dakotas, of which 174 were residents of South Dakota.
- May 1883 Flood (Rapid City) -- Similar flood to 1878: bridges, buildings, and homes received heavy water damage.
- Spring 1881 Flood (Big Sioux River) -- Winter began in mid-October 1880. The total winter was very cold and an accumulation of two to four feet of snow covered the state. When the ice broke up in March, the Big Sioux River Basin was flooded. Sioux Falls was especially hit hard. The river was recorded as rising 16 feet in 24 hours on March 20, 1881. The rapid rise brought widespread destruction throughout the Sioux Falls Area. Approximately 100 buildings in north Sioux Falls were washed away. Three major bridges were also washed out in a 15 minute period. Estimated damage was \$150,000 to the Sioux Falls area. Below the falls, farms along the river suffered heavy flood damage. Large amounts of grain, livestock and personal possessions lost to the flood. Many of the railroad bridges and wagon bridges were washed away. The only means of travel was by foot or horseback. No lives were reported lost.
- Flood (Vermillion River) -- This is recorded as the most devastating flood to occur on the Vermillion River. The town of Vermillion was located on the

banks of the Missouri and Vermillion Rivers. Almost all the homes and stores were located along or near the shoreline. The heavy accumulation of winter snow started melting which caused the Missouri River to flood. Associated with the flood was ice blockage which not only backed up the water into the Vermillion River but also formed an ice dam which prevented normal run-off. The tributary run-off added to the back water until the river became 1 to 2 miles wide in places. Mills, houses, and stables were washed away. When the Vermillion River finally broke through the ice blockage, the impact was devastating. A wall of water entered the town of Vermillion and covered it in depths ranging from 3 to 10 feet of water. The combined forces of the Missouri and Vermillion Rivers resulted in the town literally floating away. An estimated 132 buildings were totally destroyed and many others were damaged by the ice and water. The end result was  $\frac{3}{4}$  of the town totally destroyed and about \$142,000 in damages sustained. This destruction was so total and severe that the town was relocated on the bluffs behind the former town to prevent another recurrence -- thus, marking the first recorded hazard mitigation effort by a government entity in South Dakota.

- Dec 29, 1879      Earthquake -- Intensity V --- Yankton County near Yankton.
- Mar 1879          Wildfire -- This fire burned for at least 1 week in an area from Brookings County to Union County. The path was over 100 miles long and 20 miles wide.
- 1878              Flood (Rapid City) -- Rapid Creek rose 20 feet in one hour. Streets were under water, buildings flooded and bridges washed out.
- Aug 17, 1876      Earthquake -- Intensity IV --- Lyman County near Lower Brule.
- Oct 9, 1872       Earthquake -- Intensity V --- At Sioux City, Iowa: Severe effects at Yankton and White Swan.
- Feb 9, 1872       Earthquake -- Intensity III --- Stanley County near Mission Ridge.